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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,990	12/16/1999	LUTZ LANGHANS	LANGHANS	1632

20151 7590 12/04/2001

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EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 12/04/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/445,990

Applicant(s)

LANGHANS ET AL.

Examiner

James Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8,10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8,10 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Response to Amendment***

This action is in response to the applicant's response, filed 30 August 2001.

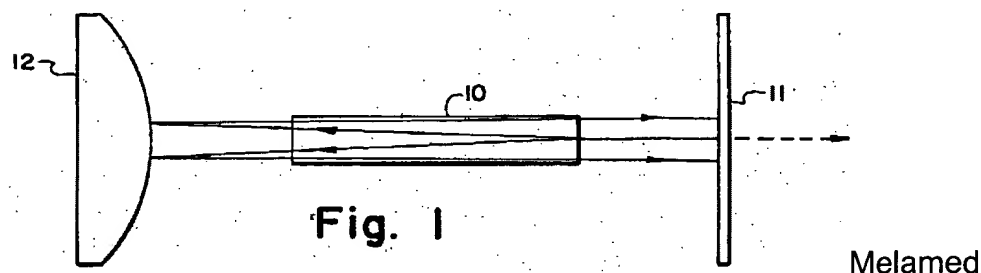
Claims 1-8 and 10-11 are pending.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

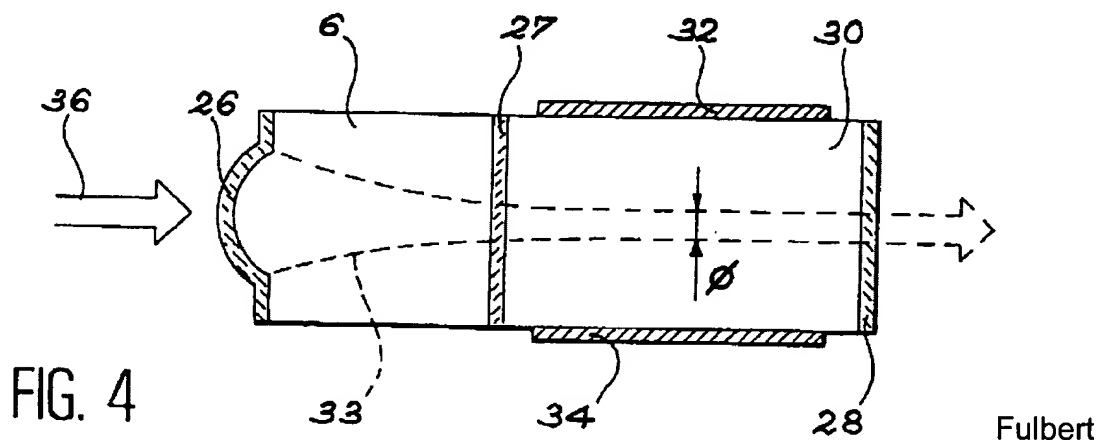
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed (US 3,975,694) in view of Fulbert (US 6,014,393). Melamed discloses the claimed invention except does not disclose as in claim 1 that the end of the laser rod near the rear mirror (the input end) is convex. Nor does Melamed disclose as in claims 2-3 that the end of the laser rod opposing the rear mirror forms the output mirror and that this end is formed planar. Melamed discloses a resonator for solid-state lasers with a laser rod 10 having two planar sides, a rear mirror 12, and a semi-reflecting output mirror 11 wherein the rear mirror 12 is convex and the output mirror 11 is arranged in close proximity to the other end of the laser rod 10 (Fig. 1, col. 4 lines 50-59).



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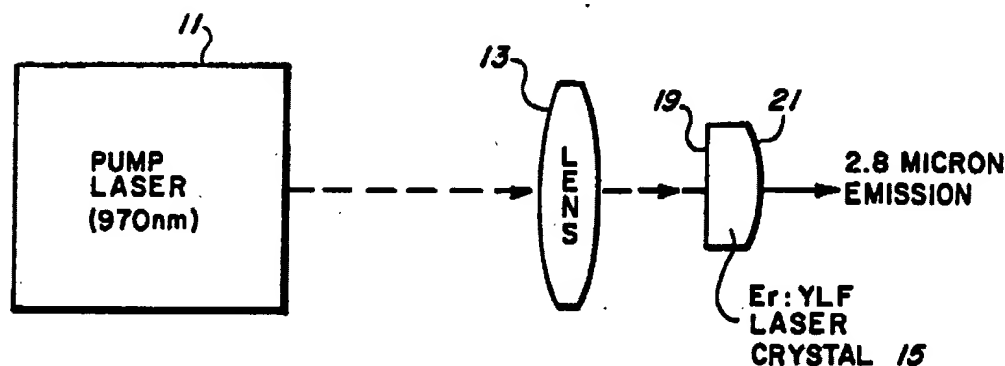
Fulbert teaches a laser rod 6 that includes a convex input end and a planar semi-reflecting output end 27 (Fig. 4, col. 5 lines 10-29). It would have been obvious to one skilled in the art to use the rod with a convex end in Melamed because this helps to stabilize the cavity, as taught by Fulbert. The Examiner contends that it would have been obvious to make integral the output mirror with the rod because "the use of a one piece construction...would be merely a matter of obvious engineering choice." see *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965).



Claims 4-5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed (US 3,975,694) in view of Esterowitz (US 5,086,432). Melamed discloses the claimed invention except does not mention that the end of the laser rod opposite the rear mirror is convex, or that the semi-reflecting output mirror is formed by this end of the laser rod. Melamed discloses a resonator for solid-state lasers with a laser rod 10, a rear mirror 12, and a semi-reflecting output mirror 11 wherein the rear mirror 12 is convex (see above). Esterowitz teaches a laser rod that has a convex output end that is a semi-reflecting output mirror (Fig. 7, col. 6 lines 21-33). It would have been obvious to

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one skilled in the art to use the rod of Esterowitz in Melamed because the convex output end can act as an output coupler, as taught by Esterowitz. It would have been obvious to make integral the output mirror with the rod for the reason shown in the above rejection.

**FIG. 7**

Esterowitz

Regarding claim 5, Melamed discloses the claimed invention except does not mention that the end of the laser rod opposite the rear mirror is convex. Melamed discloses a resonator for solid-state lasers with a laser rod 10, a rear mirror 12, and a semi-reflecting output mirror 11 wherein the rear mirror 12 is convex and the output mirror 11 is arranged in close proximity to the other end of the laser rod 10 (see above). Esterowitz teaches a laser rod with a convex output end with motivation as shown in the rejection of claim 4 above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed and Fulbert as applied to claims 1-3 above, and further in view of Kataoka (US 6,129,721). Melamed and Fulbert teach all of the limitations of claims 1-3 as shown

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above, but do not mention the variety of laser rods that may be used. Kataoka teaches the use of any of the claimed lasers (col. 9 lines 42-53). It would have been obvious to one skilled in the art to use any of those lasers because of their favorable wavelengths, as taught by Kataoka.

Claims 7-8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed and Esterowitz as applied to claims 5 and 4 above respectively, and further in view of Kataoka (US 6,129,721). Melamed and Esterowitz teach all of the limitations of claims 5 and 4 as shown above, but do not mention the variety of laser rods that may be used. Kataoka teaches the use of any of the claimed lasers with motivation as shown in the above rejection of claim 6.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed and Fulbert as applied to claims 1-3 above, and further in view of Richmond (US 5,699,376). Melamed and Fulbert teach all of the limitations of claims 1-3 as shown above but make no mention that the output mirror should be close to the laser rod, specifically within approximately 10 mm. Richmond teaches a laser system with a rear mirror, laser rod, and output mirror similar to that of the claimed invention (col. 4 lines 15-55), and states that the spacing between the output mirror and the rod can be changed (col. 4 lines 52-55). It would have been obvious to one skilled in the art to change the spacing in order to control the divergence of the beam, as taught by Richmond. It is an obvious optimization to change the spacing specifically as the applicant claims.

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Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Melamed and Esterowitz as applied to claim 5 above, and further in view of Richmond (US 5,699,376). Melamed and Esterowitz teach all of the limitations of claim 5 as shown above but make no mention that the output mirror should be close to the laser rod, specifically within approximately 10 mm. Richmond teaches these limitations with motivation as shown in the rejection of claim 10 above.

### ***Response to Arguments***

Applicant's arguments filed 30 August 2001 have been fully considered but they are moot in light of the new rejections above.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JM  
November 17, 2001

*Dlugosz*  
*Primary Examiner*  
*for*  
*SPE Dzierzynski*